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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,711	08/28/2001	Yuuji Tanjo	50195.269	2733

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EXAMINER

MERCADO, JULIAN A

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,711

Applicant(s)

TANJO ET AL.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19 and 23-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19, 23, 25-42 and 44-47 is/are rejected.
- 7) ☒ Claim(s) 24 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 28, 2005 has been entered.

Claim Objections

The objection to claim 40 has been withdrawn.

Claim Rejections - 35 USC § 112

The prior rejection of claims 20 and 21 under 35 U.S.C. 112, first paragraph has been withdrawn.

(new rejection)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 21 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a first and second active material layer having respective first and second porosity ranges, does not reasonably provide enablement for another active material

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layer, i.e. a third active material layer having a porosity range different from the first and second porosity ranges. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. See specification on page 9, line 32 et seq., where a two layer structure having active material layers 20A and 20B is disclosed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23-25, 37 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 is dependent from claim 22, which has been canceled. The scope of claim 23 is therefore indefinite. For purposes of examination and claim interpretation, claim 23 has been interpreted to depend from independent claim 19.

Claims 24, 25, 37 and 38 are rejected under 35 U.S.C. 112, second paragraph as being dependent upon a rejected base claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 19-21 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Ochoa et al. (U.S. Pat. 6,046,268).

Ochoa et al. is directed towards lithium ion batteries. (col. 1 line 42 et seq.) Both the anode and cathode electrodes comprise particles of active material on a current collector having a “bimodal size distribution” whereby smaller particles settle towards the lower surface. (col. 2 line 45-55) Thus, the smaller particles defining a “tail” at the low end of the particle distribution curve is considered to read on a first active material layer. (ib.) These smaller particles as they settle around each other would naturally flow to have smaller porosities. By a first porosity range in the first active material layer and second active material layer having a porosity range higher than the first porosity range, it appears to the examiner based on page 13 of the specification that applicant equates small particle diameters with a resultant higher porosity, “[w]hen a particle diameter of the positive electrode active material is small, or when the porosity of the active material layer is large, the migration of lithium ion in the electrolytic solution in the electrode in the layer thickness direction is in the rate-determining step at the time of discharging the large current.” (lines 26-30) However, given the claim language it’s broadest reasonable interpretation, the second active material layer in Ochoa et al. residing above the first active material layer is considered to have a higher porosity range to the extent that larger particle diameters will have larger interstitial pores therebetween. As a matter of record, the examiner interprets a porosity range equal to the pore size, while it appears to the examiner that applicant intends to recite a porosity range as equal to the number or density of pores.

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Claim Rejections - 35 USC § 103

The rejection of claims 19, 26-31 and 33-36 under 35 U.S.C. 103(a) based on Kawakami et al. (U.S. Pat. 6,432,585 B 1) and Kohama (JP 11-31498) and the rejection of claims 19, 22, 26-31 and 33-36 under 35 U.S.C. 103(a) based on Kawakami et al. and Wang et al. (U.S. Pat. 6,159,636) have each been withdrawn.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25-32, 37-42 and 44-47 rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al. as applied to claims 19-21 and 23 above.

The teachings of Ochoa et al. are discussed above.

As to claims 25-32, 37, 38-42, 44-47 drawn to porosity ranges, particle diameters and thicknesses of the electrode, absent of unexpected results it is asserted that these are optimizable parameters for result-effective variables. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

Claims 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochoa et al. as applied to claims 19-21, 23, 25-32, 38-42 and 44-47 above, in view of Kawakami et al. (U.S. Pat. 6,432,585 B1).

The teachings of Ochoa et al. are discussed above.

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Kawakami et al. has been discussed in detail in the previous Office action. While Ochoa et al. does not explicitly teach a lithium manganese oxide nor an electrolyte such as LiPF_6 at the claimed concentration, Kawakami et al. teaches these components as conventional in accordance with the current state of the art in battery manufacturing and implementation. (see Kawakami et al. at col. 9 line 32-42 and col. 31 line 19-28, see also Ochoa et al. at col. 1 line 42 et seq.) The skilled artisan would find obvious to employ a lithium manganese oxide and an LiPF_6 electrolyte for reasons such as achieving a higher cell and higher temperature performance.

Allowable Subject Matter

The consideration and prior art search for the present amendment has negated the allowability of prior claims 23, 24, 25, 32, 37 and 38, presently rewritten as pending claims 42, 43, 44, 47, 45 and 46, respectively.

However, claims 24 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach or suggest the claimed invention regarding first and second active material layers wherein the second active material layer has a higher porosity range than the first active material layer, and wherein the first and second active material layers have identical particle sizes. Ochoa et al. as relied upon in this Office action is considered to teach a second active material layer having a higher porosity range than the first active material layer by virtue of the second active material layer being a larger particle size. In reciting identical particle

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sizes, claims 24 and 43 obviate the alternative interpretation of porosity range (as applied in this Office action) as being equal to particle size, and is understood to equal the number or density of the pores in the active material layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER